

SOUTHWEST AREA FIRE WEATHER ANNUAL OPERATING PLAN

2014



**Arizona
New Mexico
West Texas
Oklahoma Panhandle**

2014 SOUTHWEST AREA FIRE WEATHER ANNUAL OPERATING PLAN

SECTION	PAGE
I. INTRODUCTION	1
II. SIGNIFICANT CHANGES SINCE PREVIOUS PLAN	1
III. SERVICE AREAS AND ORGANIZATIONAL DIRECTORY	2
IV. NATIONAL WEATHER SERVICE SERVICES AND RESPONSIBILITIES	2
A. Basic Services	2
1. Core Forecast Grids and Web-Based Fire Weather Decision Support	2
2. Fire Weather Watches and Red Flag Warnings (RFW)	2
3. Spot Forecasts	4
4. Fire Weather Planning Forecasts (FWF)	6
5. NFDRS	7
6. Fire Weather Area Forecast Discussion (AFD)	8
7. Interagency Participation	8
B. Special Services	8
C. Forecaster Training	8
D. Individual NWS Forecast Office Information	9
1. Northwest Arizona – Las Vegas, NV	9
2. Northern Arizona – Flagstaff, AZ	9
3. Southeast Arizona – Tucson, AZ	9
4. Southwest and South-Central Arizona – Phoenix, AZ	9
5. Northern and Central New Mexico – Albuquerque, NM	9
6. Southwest/South-Central New Mexico and Far West Texas – El Paso, TX	9
7. Southeast New Mexico and Southwest Texas – Midland, TX	9
8. West-Central Texas – Lubbock, TX	9
9. Texas and Oklahoma Panhandles – Amarillo, TX	9
V. WILDLAND FIRE AGENCY SERVICES AND RESPONSIBILITIES	10
A. Operational Support and Predictive Services	10
B. Program Management	11
C. Monitoring, Feedback and Improvement	11
D. Technology Transfer	11
E. Agency Computer Systems	11
F. WIMS ID's for NFDRS Stations	11
G. Fire Weather Observations	11
H. Southwest Area Predictive Services Committee & Local Fire Management Liaisons	13

VI. JOINT RESPONSIBILITIES	13
A. Training.....	13
B. Incident Response	13
C. Briefings.....	14
D. NWS Fire Weather Chatrooms and Conference Calls.....	14
VII. EFFECTIVE DATES OF AOP	16
VIII. AGENCY SIGNATURES.....	16
IX. APPENDICES	17
A. Forecast Element Definitions	17
1. General Parameters and Haines Index	17
2. Ventilation	18
3. Lightning Activity Level (LAL).....	19
B. NWS Forecast Examples and Access	20
1. Fire Weather Planning Forecast (FWF).....	20
2. Spot Forecast (FWS).....	20
3. Red Flag Warning / Fire Weather Watch (RFW).....	20
4. NFDRS Forecast (FWM).....	21
C. NWS Fire Weather Zones Maps.....	22
D. NFDRS Zone and Station Maps.....	24
E. NWS Digital Fire Weather Forecasts and Services	27
F. Backup Spot Forecast Request Form and Instructions	28
G. Catalog of RAWS and NFDRS Observation Sites	30
H. Verification.....	34
I. New Mexico Ventilation Index Forecast Request	35
J. HYSPLIT Trajectories with Spot Forecasts	36
K. Online Map and Maps Data Access.....	3

I. INTRODUCTION

This document serves as the Interagency Fire Weather Annual Operating Plan (AOP) for the Southwest Geographic Area. The general relationship between NWS and the interagency fire management community is set forth in the National Interagency Agreement for Meteorological Services. The AOP provides specific procedural and policy information regarding the delivery of meteorological services to the fire management community in the Southwest Area, as allowed under the umbrella of the National Agreement. References include:

- A. National Weather Service NWSI 10-4: Fire Weather Services
- B. Interagency Agreement for Meteorological Services (Referred to as the National MOA, or “National Agreement”)
- C. Southwest Area and National Mobilization Guides

Participating Agencies cooperating in this AOP are:

- 1. DOC/NOAA/National Weather Service – Western and Southern Regions
- 2. USDA Forest Service – Southwest Region
- 3. DOI Bureau of Land Management – Arizona & New Mexico State Offices
- 4. DOI National Park Service – Intermountain Region
- 5. DOI US Fish and Wildlife Service – Southwest Region
- 6. DOI Bureau of Indian Affairs – Units of the Southwest, Navajo, and Western Regions that fall within the Southwest Geographic Area
- 7. New Mexico State Forestry Division
- 8. Arizona State Land Department
- 9. Texas Forest Service — Areas west of 100° W longitude

II. SIGNIFICANT CHANGES SINCE LAST YEAR

- A. The National Weather Service Forecast Office in Tucson expanded the number of fire weather zones this year from three (3) to four (4). The new zones in Southeast Arizona are numbered consecutively from AZ150 through AZ153. Shapefiles are available for the new zones at <http://www.nws.noaa.gov/geodata/catalog/wsom/html/firezone.htm>. The new zones are displayed in the updated Arizona Zone map in Appendix C on page 22.
- B. Discontinuation of the Lightning-Based RFW test and data archiving by National Weather Service Forecast offices in the Southwest Area.
- C. Forecasters are now encouraged to look at atmospheric stability and additional fuel parameters when deciding on the issuance of Red Flag Warnings and Fire Weather Watches (See Section IV-A Basic Services: Fire Weather Watch and Red Flag Warnings on Page 3).

III. SERVICE AREA AND ORGANIZATIONAL DIRECTORY

- A. Fire weather services are provided by SWA Predictive Services and the NWS forecast offices listed below and depicted within [Appendix C](#). Local NWS office Fire Management Liaisons are listed below and their general roles highlighted in Section V(H). Additional contact information can be found in the [Southwest Area Mobilization Guide, Chapter 50 – Directory](#).

<u>NWS Forecast Office</u>	<u>Fire Management Liaison</u>
Las Vegas, NV - VEF	Mike Trent – BLM AZ, FMO, Colorado River District, mtrent@blm.gov
Flagstaff, AZ - FGZ	Ed Hiatt – USFS/NPS North Zone FMO, erhiatt@fs.fed.us
Tucson, AZ - TWC	Mike Wilke - Asst. Ctr. Mgr., Tucson Dispatch, mwilke@fs.fed.us
Phoenix, AZ - PSR	Helen Graham – USFS, Tonto NF, Deputy Fire Staff, hgraham@fs.fed.us
Albuquerque, NM - ABQ	David Isackson – USFS, AFMO, Santa Fe NF - Cuba RD, dwisackson@fs.fed.us
Amarillo, TX - AMA	Steve Fisher – NPS, GIS Specialist, Lake Meredith NRA, Steve_Fisher@nps.gov
Lubbock, TX - LUB	Justin Musgraves – TFS, Regional Fire Coordinator I, jmusgraves@tfs.tamu.edu
Midland, TX - MAF	Ty Bryson - FMO, Roswell BLM, Carlsbad Field Office, tbryson@blm.gov
El Paso, TX - EPZ	Caleb Finch – AFMO, Lincoln NF, Sacramento RD, cfinch@fs.fed.us Juan Ortiz – Asst. Ctr. Mgr., Silver City Dispatch, jortiz@fs.fed.us

IV. NATIONAL WEATHER SERVICE SERVICES AND RESPONSIBILITIES

- A. Basic Services – The following constitute the current operational fire weather forecast products provided by NWS. Experimental products for evaluation are clearly labeled as such.
1. Core Forecast Grids and Web-based Fire Weather Decision Support – National Digital Forecast Database (NDFD) grids are used to produce a wide variety of products and services for fire weather support. Operational status of NWS grid elements is available at this website:

http://www.weather.gov/ndfd/resources/NDFD_element_status.pdf

The NWS digital database provides several decision support tools accessible via NWS fire weather web pages, including weather data for FARSITE input. For more information on these tools, please see [Appendix E](#) or contact your local NWS office.

2. Fire Weather Watches and Red Flag Warnings (RFW) – A Red Flag event is a critical combination of dry fuels and weather conditions that support extreme fire behavior. Red Flag Warnings are issued to identify Red Flag events which are highly likely, or imminent, usually within the following 12-48 hour period. Fire Weather Watches are issued to identify the elevated threat of similar conditions during the following 18-96 hour period. Specific objective criteria for Red Flag events are listed below.

Fire management may also request that Red Flag Warnings or Fire Weather Watches be issued under extenuating circumstances (i.e., fuel conditions so severe that marginally windy and dry conditions would lead to extreme fire behavior).

- a) Criteria – Standardized criteria for issuance of Fire Weather Watches and Red Flag Warnings in the Southwest Area are a combination of weather and fire danger ratings. In the absence of overriding input from fire management personnel, a Red Flag event is defined by the following conditions occurring simultaneously for three or more hours across any portion of a fire weather zone:
- 1) 20-foot winds sustained 20 mph or greater, or gusting to 35 mph or greater
 - 2) Relative humidity of 15% or lower
 - 3) NFDRS adjective fire danger rating of “High” or higher

The following are assumed:

- Sustained winds are considered relative to the midpoint of a forecast range (i.e. 15 to 25 mph meets criteria, 15 to 20 mph does not)
- RH is considered relative to the minimum value in a given forecast range. (i.e. 13 to 23% forecast for a zone meets criteria for those locations in the zone expected to be 15% or less)
- Wind forecasts are for the 20-foot level/10 minute time average and apply to RAWS properly sited and maintained, per NWCG NFDRS Standards.

As part of the warning decision making process, forecasters are encouraged to consider atmospheric stability parameters (Haines Index), temperature anomalies, mixing heights, and even cloud cover, as well as the environmental state of vegetative fuel inputs such as dryness levels and green-up when determining the issuance of a Fire Weather Watch or Red Flag Warnings - especially under low-end critical conditions and in the absence of known critical fire weather patterns.

- b) Product Format and Contents – See [National Weather Service Instruction \(NWSI\) 10-401](#) or the NWS Forecast Examples of a Red Flag Warning and a Fire Weather Watch (RFW) in [Appendix B](#).
- 1) Headline including description of watch/warning, description of valid location and time period for which watch/warning is valid. **The headline may also identify exceptional Red Flag events which present an “extremely dangerous situation”.**
 - 2) List of fire weather zones or counties impacted.
 - 3) Short discussion detailing causes and nature of event.
 - 4) Bulleted main body that conveys concise information with regards to affected areas, wind and relative humidity information and the impacts the watch/warning may have.

Procedures and Access – Fire Weather Watches and Red Flag Warnings are headlined in spot forecasts, the forecast narrative and appropriate zone sections. The headline is the same descriptive format as in the RFW product. If issuance of a Red Flag Warning or Fire Weather Watch requires an update of the forecast; the NWS office will verbally notify the affected dispatch centers and SWCC Predictive Services as soon as possible. Red Flag Warnings and Fire Weather Watches remain in effect through the expiration time noted in the forecast, or until canceled or upgraded. Red Flag Warnings and Fire Weather Watches are available from websites of the NWS Forecast Offices, [SWCC Fire Operations](#) and the [NWS National Fire Weather](#) website.

3. Spot Forecasts (FWS)

- a) Criteria - Spot forecasts are detailed site-specific forecasts issued for wildfires, prescribed burns, search and rescue operations, aerial spraying, etc., and are available upon request at any time of day, week or season. Spot forecasts are available to any federal, state or municipal agency.

Spot forecasts are considered one-time requests, and are not routinely updated. Spot forecasts will be updated when representative observations are available to the forecaster and/or the forecaster deems the current forecast does not adequately represent current or expected weather conditions. Priority for the update of spot forecasts is as follows:

- 1) Wildfires
- 2) Prescribed burns
- 3) All other requests

Land management personnel should contact the appropriate WFO for a spot update if forecast conditions appear unrepresentative of the actual weather conditions.

The spot forecast will be corrected when a typographical/format error is detected. Corrections should be sent out in the same manner as the original spot forecast.

- b) Content and Format – See NWS Forecast Examples of a Spot Forecast (FWS) in [Appendix B](#). Spot forecasts will contain the required minimum elements listed below, unless otherwise specified upon request:

- 1) Headline (required when Red Flag Warning / Fire Weather Watch)
- 2) Discussion
- 3) Sky/weather (including chance of rain)
- 4) Temperature
- 5) Relative humidity
- 6) 20 foot winds

FOR NEW MEXICO: In addition to the aforementioned elements, NWS offices supporting fire operations in New Mexico will provide a narrative ventilation trend on spot forecasts in accordance with a request from the New Mexico Interagency Coordinating Group. (To view the request letter, please refer to [Appendix I](#)). For example:

VENTILATION TREND...POOR/0 KNOT-FT AROUND MID-MORNING
BECOMING POOR/12000 KNOT-FT BY MID-AFTERNOON.

FOR ARIZONA: Optional elements may be included upon request, including site-specific ventilation for smoke management purposes. The following conditions apply to the provision of ventilation data in spot forecasts in Arizona:

- Ventilation for the nearest forecast reference point in the fire weather planning forecast rates MARGINAL or POOR.
- Elevation-adjusted ventilation for a specific site, based on information in the fire weather planning forecast, rates MARGINAL or POOR.
- The fire weather planning forecast rating is FAIR, but unusual, extenuating circumstances make additional information essential for accomplishment of management objectives (e.g. particularly sensitive downwind receptor). In these unusual cases, the requester is encouraged to call/consult with the fire weather meteorologist on duty prior to submitting a spot request.

FOR ALL SOUTHWEST AREA OFFICES: The valid time will be determined at the time of the request. Most spots contain three periods, usually “TODAY”, “TONIGHT”, and “NEXT DAY”, e.g., “TODAY”, “TONIGHT”, and “THURSDAY”

- c) Procedures - Web based “NWS Spot” is the standard for requesting and retrieving spot forecasts and should be used when available. Individual websites of the various NWS Forecast Offices serving the Southwest Area, the [SWCC Fire Operations website](#) and the [NWS National Fire Weather webpage](#) can all be used to request a spot forecast.

When internet access is not available, spot forecasts may be requested via phone, or fax machine using the Backup Spot Forecast Request Form in [Appendix F](#). Spot forecasts should be available within 60 minutes from the time the appropriate NWS office receives the request. NWS should be contacted immediately by telephone if a spot forecast is not available within this time frame.

HYSPLIT Trajectories are available as an optional spot forecast element via request using NWS Spot. [See Appendix J for more information.](#)

At or before the time of a spot request, the requesting agency should provide information about the location, topography, fuel type(s), elevation(s), size, ignition time, and a contact name(s) and telephone number(s) of the responsible land management personnel. Also, quality representative observation(s) at, or near, the site of the planned prescribed burn, or wildfire, should be available to the responsible WFO with the spot request(s). NWS Spot and the backup form will provide blocks to fill this data in and will indicate which are absolutely essential to receive a spot forecast.

- d) Spot Forecast Feedback Requirement – Responsibility for providing fireline observations for the validation of forecast accuracy rests with the fire management agencies, as outlined under Fireline Observations and Spot Forecast Feedback on page 12.
- 4) Fire Weather Planning Forecasts (FWF) - Fire Weather Planning forecasts are issued by all NWS offices serving the Southwest Area. The intent is to provide general, zone-based information for daily preparedness and planning purposes.
- a) Issuance times - At least once daily by 0830 LST on a year round basis. Offices issue afternoon forecasts either on a year-round or a seasonal basis no later than 1530 LST. Beginning and ending dates of seasonal afternoon forecasts will be coordinated through Predictive Services.

Forecasts are updated when a Fire Weather Watch or a Red Flag Warning is issued, if the current forecast does not adequately represent current or expected weather conditions, or if a typographical/format error is detected.

- b) Access – Planning forecasts can be retrieved from the websites of NWS Forecast Offices serving the Southwest Area, [SWCC Fire Operations](#), the [NWS National Fire Weather](#) website or via WIMS.
- c) Content and Format – Forecasts will conform to either the national standard narrative, or national standard tabular format, per NWSI 10-401. Each forecast will begin with a headline(s), if applicable, followed by a non-technical weather discussion. Individual zone forecasts follow the discussion and contain the following elements:

MANDATORY ELEMENTS:

- 1) Headline(s) as appropriate
- 2) Sky/weather
- 3) Temperature and 24 hour trend
- 4) Humidity and 24 hour trend
- 5) Winds - 20 foot RAWS Standard (slope/valley)
- 6) 10,000 Ft. MSL Wind (ridgetop)
- 7) Mixing Level (Daytime. Mandatory for NM offices only)
- 8) Transport Winds (Daytime. Mandatory for NM offices only)
- 9) Ventilation (Daytime. Mandatory for NM offices only)

- d) OPTIONAL ELEMENTS:
 - 1) Probability of Precipitation (replaces qualifying weather descriptor)
 - 2) Lightning Activity Level (LAL)
 - 3) Haines Index
 - 4) Mixing Level
 - 5) Transport Winds
 - 6) Ventilation (kt-ft) and/or Ventilation/Dispersion Category
 - e) Miscellaneous
 - 1) **Important:** Ventilation/Dispersion is a State-defined parameter and is required for daytime periods only. Ventilation information is not provided for every zone in AZ or TX.
 - 2) Extended Outlook to at least day 5 (may appear at end of product)
 - 3) Descriptions of Forecast Parameters can be found in [Appendix A](#), and Fire Weather Planning Forecast (FWF) examples in [Appendix B](#).
- 5) NFDRS Forecasts (FWM) – The National Weather Service provides 24 hour forecasted weather information that allows the NFDRS software to predict the next day’s fire danger indices.
- a) Criteria for Issuance – NFDRS observations must be complete and available in WIMS by 1350 LST (1450 LDT) to be received in time for the NWS to produce a forecast. When NFDRS observations are received, the appropriate NWS office will issue forecasts for use by the NFDRS on a year-round basis. NFDRS stations that are not on time in WIMS will not have next day fire danger indices available.
 - b) Content and Format – Complies with NWSI 10-4 and is outlined in [Appendix A – NFDRS Forecasts](#) for reference. Required meteorological elements for NFDRS forecasts are: State of Weather, Temperature, Humidity, Lightning Activity Level, Wind speed, and Precipitation Duration. **Max/Min temperature and humidity are required for “station specific” forecasts.** The actual NWS NFDRS forecast product is used only by WIMS and is not viewed directly by fire management.
 - c) Procedures – For every NFDRS observation received from WIMS at the 1400 LST (1500 LDT) collective, forecast weather parameters for 1300 LST (1400 LDT) next day will be produced, and may be a combination of zone or station trends, or station specific forecasts. Zone and station trend forecasts will be favored over station specific forecasts. If station specific forecasts are issued, NWS will ensure forecasted values do not conflict with historical possibilities. **Forecasts need to be transmitted by about 1440 LST (1540 LDT) to provide timely next-day forecast indices.**

- 6) Fire Weather Area Forecast Discussion – The Area Forecast Discussion (AFD focuses on the most significant weather issues affecting an NWS office’s forecast area over the next seven days. During heightened fire activity a fire weather section (.FIRE WEATHER...) is included in the AFD containing weather information of interest to fire managers.
- a) Issuance times – Twice daily around 0330 and 1530 LT during the year. NWS offices may issue intermediate AFDs around 0930 and 2130 LT, or as deemed appropriate by the office.
 - b) Access – Primary method to retrieve forecasts will be directly from websites of NWS forecast Offices serving the Southwest Area, or via SWCC Forecast Operations website.
 - c) Content and Format – The AFD is a free text format product. Multiple sections exist in this product discussing significant weather issues affecting an NWS office’s area of responsibility. During heightened fire activity, a “FIRE WEATHER...” section is included containing weather information of interest to fire managers.
- 7) Interagency Participation - NWS offices within the Southwest Area are expected to provide representation at the annual regional AOP meeting, with proxy representation acceptable, and will be invited to serve as technical advisors on the Southwest Area Predictive Services Committee as appropriate. NWS offices are also expected to host at least one meeting per year with local fire management units to strengthen the customer relationship and address local concerns.
- B. Special Services – NWS maintains a cadre of trained IMETs per [NWSI 10-405](#). A sufficient number of IMETs should be available from Southwest Area offices to support multiple incidents in May and June. At least one IMET from the offices that serve the Southwest Area should be available for dispatch between March 1st and August 1st. IMETs serving R3 are placed in ROSS prior to the beginning of the main R3 fire season.
- C. Forecaster Training - All NWS meteorologists producing fire weather products meet the training requirements defined in [NWSI 10-405](#).

- D. Individual Forecast Office Information - (Click on [blue typeface](#) in the table for “hyperlinked” information).

Northwest Arizona - Las Vegas, NV	http://www.wrh.noaa.gov/firewx/?wfo=vef
FIRE ZONES	AZ 101 and 102
SPOT FORECAST REQUEST	http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=vef
NFDRS ZONES	301 and 311
Northern Arizona - Flagstaff, AZ	http://www.wrh.noaa.gov/firewx/?wfo=fgz
FIRE ZONES	AZ 104 through 118, and AZ 137 through 140
SPOT FORECAST REQUEST	http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=fgz
NFDRS ZONES	302, 303, 304, and 308
Southeast Arizona - Tucson, AZ	http://www.wrh.noaa.gov/firewx/?wfo=twc
FIRE ZONES	AZ 150, 151, 152 and 153
SPOT FORECAST REQUEST	http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=twc
NFDRS ZONES	305 and 306
South-Central and Southwest Arizona - Phoenix, AZ	http://www.wrh.noaa.gov/firewx/?wfo=psr
FIRE ZONES	AZ 131, 132, and 133 (also CA 230, 231, and 232)
SPOT FORECAST REQUEST	http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=psr
NFDRS ZONES	307, 309, 310
North and Central New Mexico - Albuquerque, NM	http://www.srh.noaa.gov/abq/firewx/fw-3.php
FIRE ZONES	NM 101 through 109
SPOT FORECAST REQUEST	http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=abq
NFDRS ZONES	351 through 359
South-Central and Southwest NM and Far West Texas - El Paso, TX	http://www.srh.noaa.gov/epz/?n=fireweather
FIRE ZONES	NM 110 through 113 and TX 055 and 056
SPOT FORECAST REQUEST	http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=epz
NFDRS ZONES	360 through 363
Southeast New Mexico and Southwest Texas - Midland, TX	http://www.srh.noaa.gov/maf/?n=top_fire
FIRE ZONES	Southeast New Mexico Zones and West Texas Zones
SPOT FORECAST REQUEST	http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=maf
NFDRS ZONES and STATIONS	NM 364 and 365, points in Southwest Texas
OTHER PRODUCTS	Fire Danger Statement
West-Central Texas - Lubbock, TX	http://www.srh.noaa.gov/lub/?n=fireweather
FIRE ZONES	West-Central Texas Zones
SPOT FORECAST REQUEST	http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=lub
NFDRS STATIONS	Caprock (418901), Matador (418902), Jayton (419001)
OTHER PRODUCTS	Fire Danger Statement
Texas and Oklahoma Panhandles - Amarillo, TX	http://www.srh.noaa.gov/ama/?n=fireweather
FIRE ZONES	Texas & Oklahoma Panhandles Zones
SPOT FORECAST REQUEST	http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=ama
NFDRS STATIONS	Cedar (418701) and Bootleg (418801)
OTHER PRODUCTS	Fire Danger Statements

V. WILDLAND FIRE AGENCY SERVICES AND RESPONSIBILITIES

The following section and the associated maps and information will also be available and updated online on the SWCC Predictive Services Weather page. Please check under SWCC Products for additional information and updates.

Wildland Fire Agency programs provide Geographic Area and national products for the strategic role of resource prioritization and utilization. Some specific responsibilities of Wildland Fire Agencies are listed below.

- A. Operational Support and Predictive Services – Interagency fire meteorologists at SWCC combine forecast information from NWS and other sources into area-wide summaries and briefings. These meteorologists work in conjunction with Fire Intelligence to form the Predictive Services Group, which produce integrated fire weather/fire danger assessments for the entire Southwest Area.

The intent of Predictive Services is to provide strategic, regional and sub-regional information to assist in the preparedness, movement and allocation of firefighting resources. SWCC Predictive Services is the provider of fire danger and potential forecasts within the Southwest Area beyond the next day NFDRS forecasts provided by the NWS.

Predictive Services Products – The list below is comprised of the main program operational products and a general description for each. A matrix containing a hyper-linked list of all products, their descriptions, and issuance schedules is maintained online on the [Predictive Services Outlook Product Schedule and Description](#) web page. Please refer to this resource or the [SWCC Website](#) for complete, updated product information.

1. Area-Wide Fire Weather Outlook Maps - Fire weather outlooks combine information from FCAMMS/Rocky Mountain Center, NWS and Predictive Services meteorologists into a day 1 and day 2 graphic of significant fire weather parameters.
2. 7-Day Significant Fire Potential Outlook - Integrates fuel dryness, weather triggers and resource capability into statistically based large fire potential by Predictive Services Area (PSA). Includes general weather synopsis, fire potential discussion, resource discussion, and anticipated resource demand outlook.
3. Monthly and seasonal fire potential outlooks - Utilizes all available weather, climate and fire danger information to make long-term predictions of fire business potential. Monthly outlooks are national in scale, and highlight the potential for significant fire activity and resource utilization relative to normal. Seasonal outlooks are similar, and cover the following three months.
4. Fire Potential Video Briefings – Online video briefings are provided to supplement daily fire potential products during the fire season and monthly/seasonal outlooks in the months leading up to fire season.

- B. Program Management - Management of federal land management and fire agency fire weather programs and responsibilities.
1. RAWS/NFDRS - Regional RAWS Coordinator at SWCC will manage the interagency RAWS program for the Southwest Area. This includes regular monitoring of data quality, assisting with station maintenance and acquisition and development of appropriate training.
 2. Liaison - Predictive Services Group Leader/Fire Weather Program Manager will be a liaison between field fire managers and various service providers including NWS, the private sector and the research community.
- C. Monitoring, Feedback and Improvement of Fire Weather Information – SWCC meteorologists, with the assistance of the designated local fire management liaisons (listed in Section III), will monitor all sources of fire weather information to ensure consistency, quality and applicability. Where issues arise, data will be archived and brought to the attention of the provider to enhance awareness and work towards improvement. Some priorities include:
1. NFDRS forecast consistency with station climate histories.
 2. General forecast parameter consistency across the Southwest Area, especially across forecast area and land management unit boundaries.
 3. Accuracy and applicability of Red Flag Warnings.
 4. Quality of fireline observations and spot forecast feedback.
 5. Overall adherence to policies and procedures set forth in the AOP.
- D. Technology Transfer – SWCC meteorologists will work to integrate advanced technology analytical and prediction systems into fire management planning and operations. Some efforts will include:
1. Regional numerical modeling of weather and smoke dispersion.
 2. Proper use of RAWS and NFDRS.
 3. Research and development to advance fire meteorology.
- E. Agency Computer Systems - Where fire management computer systems like WIMS are locally available, access to the systems will be granted to NWS to provide or develop services, as needed. Costs will be borne by the Interagency Wildland Fire Agencies for requirements that are beyond the distribution of weather information through a central communications gateway.
- F. WIMS ID's for NFDRS Stations – All NFDRS observation stations are assigned a 6-digit NWS station identification number for use in WIMS. The SWCC RAWS Coordinator must be contacted for assignment of a 6-digit number for any new station, or for any changes in location made to existing stations that already have an NWS ID number. The RAWS Coordinator will obtain appropriate 6-digit ID's and will notify NWS, the Arizona Department of Environmental Quality, and other appropriate entities of any new or relocated NFDRS stations. [A listing of current NFDRS stations and ID's is located in the Appendices.](#)

G. Fire Weather Observations

1. RAWS & NFDRS Observations - Fire weather observations for stations that desire next day forecasts will be entered into WIMS no later than 1350 LST (1450 LDT). Observations from Remote Automated Weather Stations (RAWS) sites will be the latest data available from the satellite interrogation. RAWS and NFDRS stations are expected to be sited and maintained according to [NWCG PMS 426-3](#) "National Fire Danger Rating System Weather Station Standards". The proper siting of all stations is a goal in the Southwest Area. Any new or relocated stations will be correctly sited in a long-term effort to address this issue. Regardless of station age or location, annual RAWS maintenance requirements will be strictly adhered to.
2. Fireline Observations - Fireline observations are required when requesting a spot forecast. Fire management agency personnel will take standard fireline observations of temperature, humidity, wind speed and direction and weather/sky condition consistent with guidance provided in NFES 2140, "Weather Station Handbook - an Interagency Guide for Wildland Managers".
3. Spot Forecast Feedback and Validation - Feedback on spot forecasts is required to validate forecasts and improve accuracy. The following observational information is required to be made available to the appropriate NWS office the same day any spot forecast is issued for prescribed burn purposes.
 - a) General Requirement - The character of temperature, humidity and wind affecting the burn period. Information made available to NWS within 24 hours of forecast issuance or before issuance of next spot forecast, whichever is first. At a minimum, the following must be included (assuming daytime burn):
 - 1) Maximum temperatures
 - 2) Minimum relative humidity
 - 3) Significant afternoon winds (speed and direction)
 - b) Example of Minimum Required Feedback:
 - 1) Maximum temperature = 61
 - 2) Minimum RH = 18%
 - 3) Afternoon winds south 2-4G8 mph (eye level) shifting to west at around 1500 hours.
 - c) Acceptable Methods of Providing Spot Forecast Feedback
 - 1) Faxed copies of fireline (belt weather) observations
 - 2) Phone call to appropriate NWS office
 - 3) Submission of required information via "remarks" section of internet spot forecast
 - 4) Faxed or electronically transmitted copies of hourly data from an on-site portable weather station
 - 5) Notification of deployment of a portable GOES telemetered RAWS, so NWS can access and download the necessary data

- H. Southwest Area Predictive Services Committee and Local Fire Management Liaisons - The Chair of the Predictive Services Committee of the Southwest Area Coordinating Group will work jointly with NWS to identify local fire management agency liaisons for each NWS Weather Forecast Office (WFO). These persons will act as primary points of contact between each NWS office and the interagency fire management units they serve, and will by default be members of the Predictive Services Committee. Liaisons provide a conduit to aid in communication, organization of local customer meetings and the elevation of local field issues to the servicing NWS office and/or the Predictive Services Committee, as appropriate. Local fire management liaisons are listed in the organizational directory (Section III).

VI. JOINT RESPONSIBILITIES

- A. Training - Meteorological training assistance for NWCG and other courses is provided jointly. NWS has priority for training conducted by local units while SWCC meteorologists have priority for training conducted on a sub-regional or regional basis. **In all cases, sufficient advance notice should be given to allow for scheduling and proper preparation.**
1. NWS - Requests for training from NWS offices should be directed to that office's Meteorologist-in-Charge. For NWS to provide training for non-federal agencies, the following conditions must be met:
 - a) The NWS instructor must be the only one available to provide the training. (i.e., there are no land management agencies or private meteorologists who are ready, willing and able to provide the training.) The Southwest Area Predictive Services Group Leader will be the contact concerning the availability of non-NWS fire weather instructors.
 - b) NWS must be able to be reimbursed for associated overtime and travel costs.
 2. SWCC Predictive Services Meteorologists - Requests for training from SWCC meteorologists should be directed to the Predictive Services Group Leader/Fire Weather Program Manager.
- B. Incident Response – The NWS is the provider of Incident Meteorologists (IMETs). In general, Southwest Area NWS IMETs will be requested to respond to all incidents within the Southwest Area. Costs incurred by NWS in providing IMET support will be borne by the requesting agency. Predictive Services meteorologists can respond to incidents when the NWS cannot provide a certified IMET within 24-hours of request receipt by the National Fire Weather Operations Coordinator (NFWOC). In these instances, and when requested by incident command staff, Predictive Services meteorologists will provide forecast support as a Technical Specialist until the arrival of a certified NWS IMET.
1. All requests for IMETs will be processed through SWCC and the following information provided to the requested IMET:
 - a) Name of fire
 - b) Location of fire

- c) Directions to location where the IMET is to report
 - d) Names of Incident Commander, Plans Section Chief and Fire Behavior Analyst if available
 - e) Request and Resource Order number for IMET
 - f) Verification that “Special Needs” section on Resource Order should include authorization for use if a rental vehicle, cell phone, computer equipment, and the All Hazards Meteorological Response System (AMRS)
2. Additionally, the user agency is responsible for providing adequate shelter to allow the equipment and fire weather meteorologist to function efficiently. This would include a location free of excessive dust, heat and moisture, protection from wind and other elements, table and chair. Transportation and shelter arrangements should be made at the time of request. 120 volt AC power is desirable.
- C. Briefings - Either NWS or SWCC meteorologists will conduct briefings upon request, time and resources permitting. SWCC meteorologists will provide briefings for strategic planning purposes and will refer the requesting entities to the local NWS office(s) for specific, operationally oriented information.
- D. NWS Fire Weather Chatrooms and Conference Calls
1. The [NWS Chat Live](#) chatroom **swccfirechat** will be the routine means for real-time communication, status messaging and coordination, and will be utilized routinely by NWS and SWCC meteorologists during peak fire season. Peak fire season for the SWCC meteorologists is synonymous to when 7-day coverage is being provided, which varies from year to year based on significant fire activity and/or potential.

Expectations for use of NWS Chat:

- a) NWS participants will include at least one operational forecaster from each WFO, and may also include Incident Meteorologists (IMET’s), forecasters from the Storm Prediction Center (SPC), regional and national program leaders, and other NWS personnel as appropriate.
- b) SWCC participants will include at least the meteorologist issuing the operational outlook products.
- c) General chat monitoring and participation hours will be 0800 MDT/0700 MST to 1800 MDT/1700 MST. All participants are expected to monitor the chat during this time frame and engage in pertinent communication as necessary. This includes responding to inquiries in 30 minutes or less.
- d) Between 0900 MDT/0800 MST and 1000 MDT/0900 MST specifically, SWCC meteorologists will convey any forecast/coordination concerns impacting the fire potential situation for the coming week and pose specific questions (as necessary) to participants. Related questions may also be asked by any participant during this time frame.

- i. Any response to questions posed in the chatroom should be made within a 15 minute time frame to be operational useful to SWCC meteorologists.
 - ii. It is understood that information from a late response may not be integrated into products or services due to fixed product timelines.
 - e) It is understood that extreme and/or extenuating situations, staffing shortages/problems, IT issues, etc. may disrupt the NWS Chat environment and make meeting these expectations impossible on a full-time basis.
2. Fire Weather Conference Calls (FWCCs) will serve as a backup to the NWS Chat, should there be problems with chat servers or other unforeseen circumstance. However, during particularly active or volatile situations, SWCC or R3 NWS forecasters may still request a conference call via NWS Chat.
- a) Initiation and cancellation of FWCCs will be accomplished through phone, e-mail or chat notification of above parties by Predictive Services. It will be the responsibility of the WFOs to pass along the information to any IMETs deployed within their CWAs.
 - b) When initiated, calls will be held at 11:45 am MDT (1745 UTC) unless stated otherwise.
 - c) Any calls will be organized and conducted by Predictive Services and will follow the format below. All attempts will be made to keep the calls to 15 minutes or less and address the following:
 - 1) Overview of fire activity and fire potential situation
 - 2) Regional synopsis of current and expected fire weather situation, focusing on Critical Fire Weather patterns and/or other pertinent forecast concerns.
 - 3) Round robin where all participants will have the opportunity to ask questions and share information regarding forecast concerns, forecast differences, etc.

VII. EFFECTIVE DATES OF THE AOP

- A. Approximately May 1, 2014 to May 1, 2015.
- B. Strictly, this AOP shall be effective on the date the last signature is placed on the signature section and it will remain in effect until the date the last signature is placed on the signature page the following year. Updates or amendments may be added in the interim upon agreement of all signatories.

VIII. AGENCY SIGNATURES (On file)

Chuck Maxwell
Chair, SWCG Predictive Services Committee

Date

Claudia Bell
Fire Weather / Decision Support Services
NWS Western Region Headquarters

Date

Paul Witsaman
Regional Fire and Aviation Program Manager
NWS Southern Region Headquarters

Date

IX. APPENDICES

A. APPENDIX – FORECAST ELEMENT DEFINITIONS

1. Sky/Weather - Cloud cover (day or night) expressed as a percentage, and weather descriptors that include rain, snow, showers, thunderstorms, etc. Cloud cover is defined as follows.
 - a) Sunny (day), Clear (night) – less than 6% cloud cover
 - b) Sunny (day), Mostly clear (night) - 6% to 25% cloud cover
 - c) Mostly sunny (day), Partly cloudy (night) - 26% to 50% cloud cover
 - d) Partly sunny (day) / Mostly cloudy (night) - 51% to 69% cloud cover
 - e) Mostly cloudy to Overcast (day or night) - greater than 70% cloud cover
2. Temperature and 24-hour trend – Dry bulb temperature extreme, either daytime or nighttime, and trend of extreme from previous 24 hours.
3. Humidity and 24-hour trend – Relative humidity extreme, either daytime or nighttime, and trend of extreme from previous 24 hours.
4. Wind - 20 foot RAWS standard – Surface wind speed and direction (altered by local terrain and surface roughness) that is measured by instrumentation and adheres to standards set by NWCG for the RAWS program and NFDRS. In practice, any surface wind forecast based on the ASOS standard will be reduced by 20% to obtain 20 ft. winds, except in cases where wide-open rangeland, or desert is predominant. This same comparison will be used in considering stations other than RAWS to validate forecasts.
5. 10,000 foot MSL Wind – Synoptic scale wind speed and direction representative of winds at roughly 10,000 feet above mean sea level, which are generally unaltered by surface frictional effects. Equivalent to “ridgetop wind”, “wind aloft”, “free-air wind” and “general wind”.
6. Chance of Rain – Probability of occurrence of 0.01” or greater liquid equivalent precipitation. In the case of convective cells, this will pertain to the areal coverage of cells producing rainfall.
7. Haines Index – A numerical means to indicate the potential for existing large wildfires to experience extreme fire behavior (i.e. crowning, spotting, and rapid rates of spread). The Index combines both the instability and dryness of the air by examining the lapse rate between two pressure levels in the atmosphere and the dryness at the lower level. For most of the Southwest Area, the levels used are 700 mb (about 10,000 ft) and 500 mb (about 18,000 ft). The drier and more unstable the atmosphere, the higher the Haines Index and the potential for extreme fuel driven fire behavior. Haines Index does not include the effects of wind on fire spread. [Link to definition of the relationship between Haines Index and Large Fire Growth Potential.](#)

8. Ventilation - Basic ventilation information is used by the states of Arizona and New Mexico in considering the potential for smoke impacts from wildland fires. The following are terms and definitions necessary to understanding ventilation data and values:
- a) **Mixing height or mixing depth:** The height to which relatively vigorous mixing occurs due to heating. Units are in feet above ground level (AGL), with ground level being the elevation above mean sea level (MSL) of the upper-air site. It is important to note the difference in elevations between the burn site and the referenced upper-air sight, and then modify the provided mixing depths accordingly. Users can also view point-specific ventilation forecasts out to 72 hours from the [NWS National Fire Weather Website](#) without any adjustments.
 - b) **Transport winds:** A measure of the average rate of the horizontal transport of air within the mixing layer. Units are in knots (1 knot = 1.15 mph). An average wind direction (the direction from which the wind is blowing) is provided. If winds are light and variable as they likely will be in a critical situation, then it may be best to consider the normal drainage winds.
 - c) **Ventilation:** The product of the mixing height and the transport wind speeds. It is a measure of the volume rate of horizontal transport of air within the mixing layer per unit distance normal to the winds. Units are in knot-feet, though some regulatory entities use meters²/second. Ventilation values are established at a state level and used as breakpoints for general Ventilation or Dispersion Categories that are used for smoke management or regulatory purposes.
 - d) **Ventilation Adjective Rating Categories**

Ventilation (Dispersion) Categories and Values		
<u>Adjective Category</u>	<u>Knot - Feet</u>	<u>Meters²/Second</u>
ARIZONA		
Excellent	> 100,000	> 15,700
Very Good	70,000 – 99,999	11,000 – 15, 699
Good	40,000 – 69,000	6,300 – 10,999
Fair	20,000 – 39,999	3,100 – 6,299
Marginal	8,500 – 19,999	1,300 – 3,099
Poor	< 8,500	< 1,300
NEW MEXICO		
Excellent	> 150,000	> 23,500
Very Good	100,000 – 149,999	15,700 – 23,499
Good	60,000 – 99,999	9,400 – 15,699
Fair	40,000 – 59,999	6,300 – 9,399
Poor	< 40,000	< 6,300

9. Lightning Activity Level (LAL)

LIGHTNING ACTIVITY LEVEL GUIDE

¹ Individual storm cell cloud-to-ground lightning discharges

LAL	Cloud and Storm Development	Areal Coverage	Counts ¹ cg/5 min	Counts ¹ cg/15 min	Average ¹ cg/min
1	No thunderstorms	None	----	----	----
2	Cumulus clouds are common but only a few reach the towering stage. A single thunderstorm must be confirmed in the rating area. The clouds mostly produce virga but light rain will occasionally reach ground. Lightning is very infrequent.	<15 %	1-5	1-8	<1
3	Cumulus clouds are common. Swelling and towering cumulus cover less than 2/10 of the sky. Thunderstorms are few, but 2 to 3 occur within the observation area. Light to moderate rain will reach the ground, and lightning is infrequent.	15-24 %	6-10	9-15	1-2
4	Swelling cumulus and towering cumulus cover 2-3/10 of the sky. Thunderstorms are scattered but more than three must occur within the observation area. Moderate rain is commonly produced, and lightning is frequent.	25-50 %	11-15	16-25	2-3
5	Towering cumulus and thunderstorms are numerous. They cover more than 3/10 and occasionally obscure the sky. Rain is moderate to heavy, and lightning is frequent and intense.	>50 %	>15	>25	>3
6	Dry lightning outbreak. (LAL of 3 or greater with majority of storms producing little or no rainfall.)	>15 %	----	----	----

B. APPENDIX – NWS FORECAST EXAMPLES AND ACCESS

The most current products issued by the NWS forecast offices can be viewed by clicking on the appropriate office and product identifier in the table below. This table can also be accessed and bookmarked by going to the SWCC Fire operations website at the following web address: http://gacc.nifc.gov/swcc/predictive/weather/wx_links/NWSmatrix.htm

1. [Fire Weather Planning Forecast](#) (FWF) (Click on link for information)
2. [Area Forecast Discussion](#) (AFD) (Click on link for information)
3. [Red Flag Warning / Fire Weather Watch](#) (RFW) (Click on link for information)
4. [Spot Forecast](#) (FWS) (Click on link for information)
5. [Internet Spot Forecast Request Site](#) (Click on link for information)

VEF Las Vegas	FGZ Flagstaff	PSR Phoenix	TWC Tucson	ABQ Albuquerque	EPZ El Paso	MAF Midland	LUB Lubbock	AMA Amarillo
FWF	FWF	FWF	FWF	FWF	FWF	FWF	FWF	FWF
AFD	AFD	AFD	AFD	AFD	AFD	AFD	AFD	AFD
RFW	RFW	RFW	RFW	RFW	RFW	RFW	RFW	RFW
FWS	FWS	FWS	FWS	FWS	FWS	FWS	FWS	FWS
SPOT REQ	SPOT REQ	SPOT REQ	SPOT REQ	SPOT REQ	SPOT REQ	SPOT REQ	SPOT REQ	SPOT REQ

6. NFDRS Forecasts (FWM)

- a) **ZONE/FCST*** - Shows whether this forecast is 24 hour trend (ZONE) or specific forecast values (FCST). Trend forecasts are applied to all stations within the specified NFDRS zones. Specific point forecast values apply only to individual NFDRS stations.
- b) **YYMMDD*** - Year, month, and day valid forecast time.
- c) **NO*** - NFDRS Zone Number (or individual NFDRS station number)
- d) **13*** - Always 1300 LST
- e) **WX*** - State of Weather valid at 1300 LST tomorrow. Valid entries are:
 - 0 = Clear
 - 1 = Scattered clouds
 - 2 = Broken clouds
 - 3 = Overcast clouds
 - 4 = Foggy
 - 5 = Drizzle (resets NFDRS indices to zero)
 - 6 = Raining (resets NFDRS indices to zero)
 - 7 = Snowing or sleeting (resets NFDRS indices to zero)
 - 8 = Showers
 - 9 = Thunderstorm
- f) **TEMP*** - Temperature in deg F valid at 13 LST (or temperature trend + or -)
- g) **RH*** - Relative humidity in percent valid at 13 LST (or RH trend + or -)
- h) **LAL1#** - Lightning Activity Level 1400 LST to 2300 LST
- i) **LAL2#** - Lightning Activity Level 2300 LST to 2300 LST
- j) **WIND*** - Wind speed in mph valid at 13 LST (or wind speed trend + or -, 20 ft level/10 minute average)
- k) **10HR** - 10 hour timelag fuel moisture in percent valid at 13 LST (or trend + or -)
- l) **Tx** - Max temperature from 1300 LST to 1300 LST tomorrow
- m) **Tn** - Min temperature from 1300 LST to 1300 LST tomorrow
- n) **RHx** - Max relative humidity from 1300 LST to 1300 LST tomorrow
- o) **RHn** - Min relative humidity from 1300 LST to 1300 LST tomorrow
- p) **PD1*** - Precipitation duration in hours 1300 LST to 0500 LST
- q) **PD2*** - Precipitation duration in hours 0500 LST to 1300 LST
- r) **WETFLAG** - Y or N. Indicates whether liquid water will be on the fuels at 13 LST. (Use with caution - a "Y" will set all the NFDRS indices to zero!)

*** = Required forecast element for NFDRS # = Required forecast element for select NWS offices only**

The NFDRS Forecast will follow the comma delimited format as shown:

ZONE/FCST,NO,YYMMDD,13,WX,TEMP,RH,LAL1,LAL2,WIND,10HR,TX,TN,RHx,RHn, PD1, PD2,WETFLAG

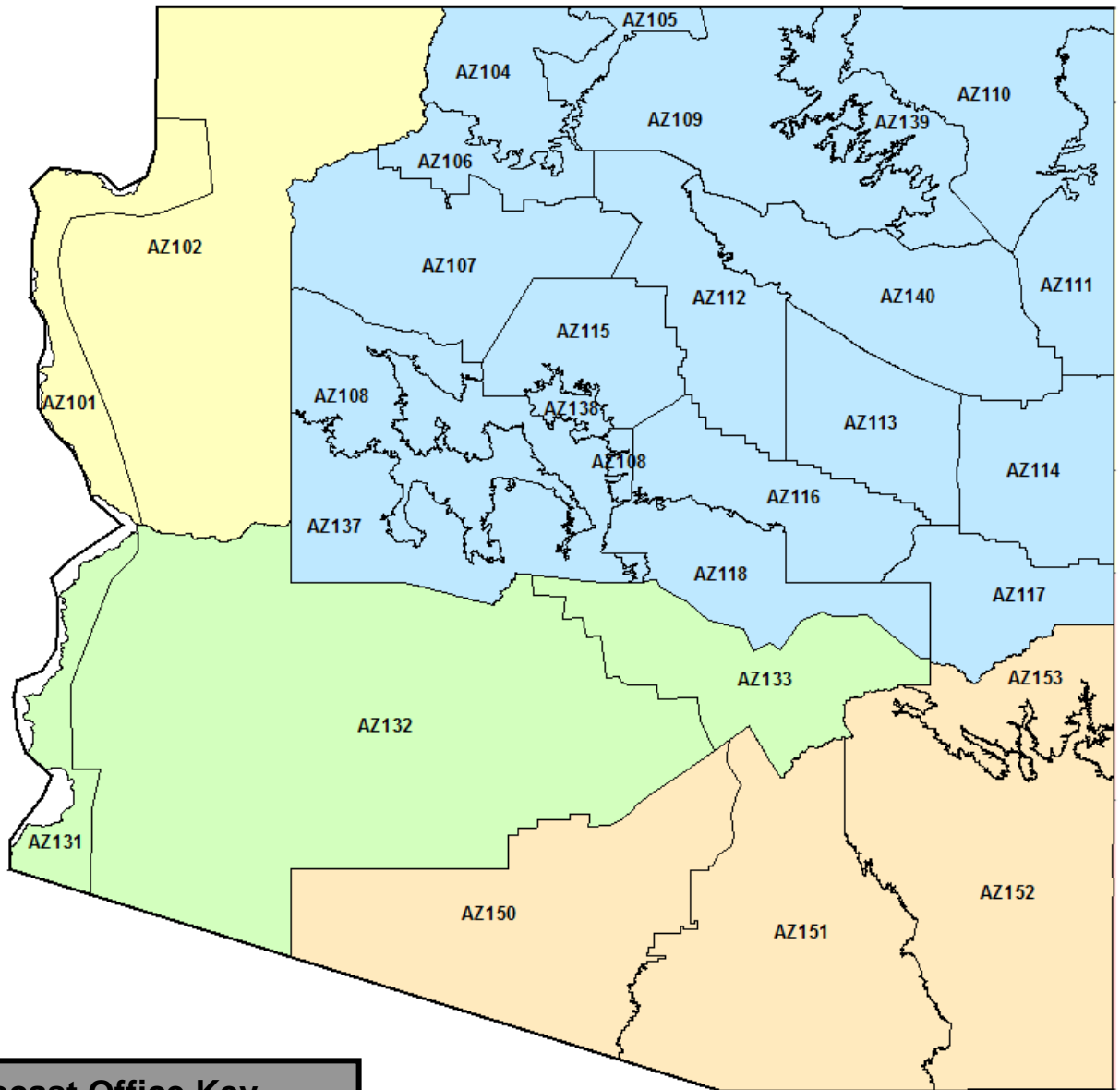
An example of products, formatted for transmission into AWIPS, is displayed below:

FNUS85 KBOI DDHHMM
FWMBOI

ZONE,404,011027,13,0,3,0,1,1,0,0,,,,,0,0,N **Zone Trend**
FCST,102709,011027,13,0,84,15,1,1,12,5,87,60,50,12,0,0,N **Station Specific**

C. APPENDIX – NWS FIRE WEATHER ZONE MAPS

1. Arizona



Forecast Office Key

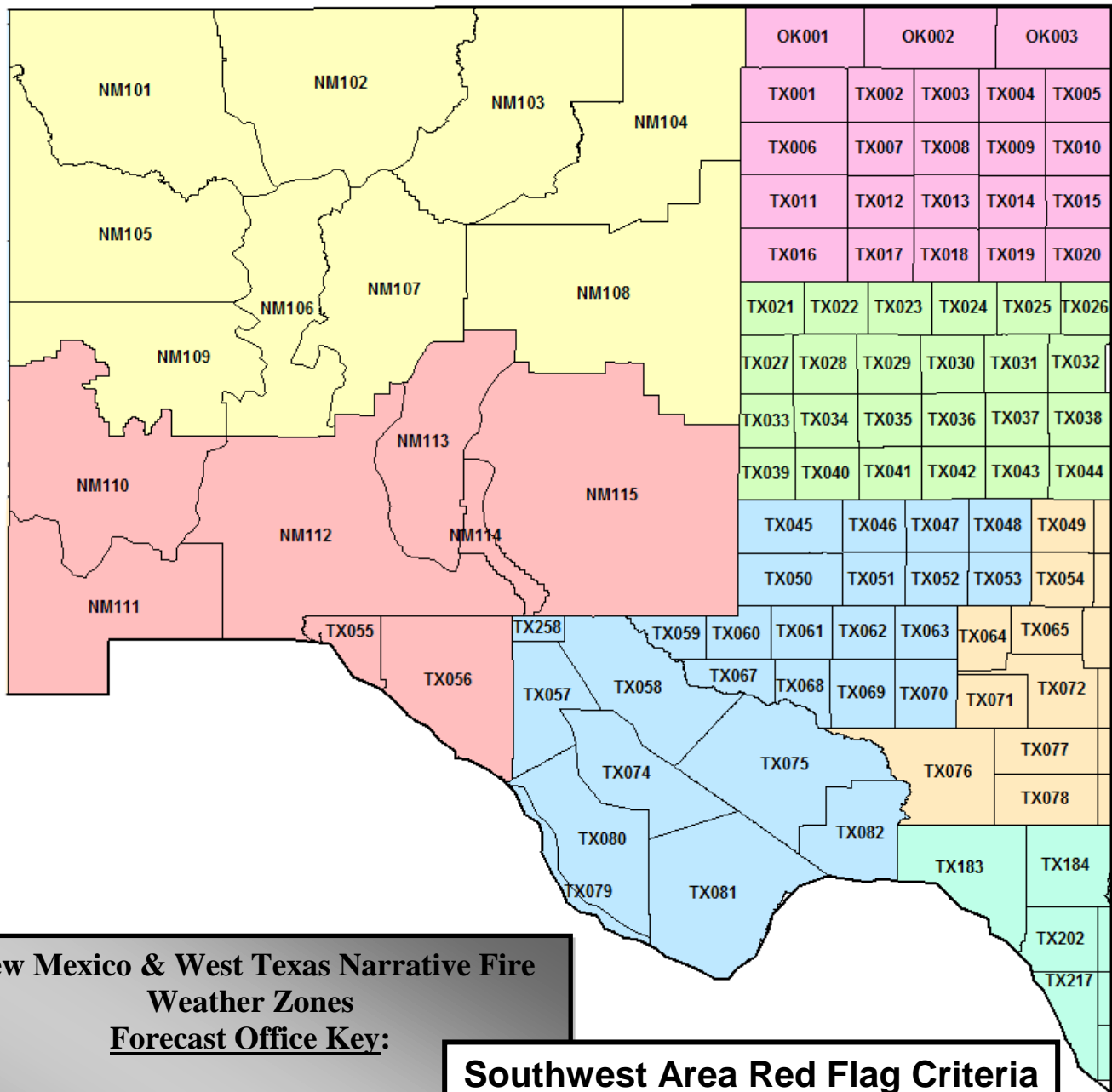
WFO Las Vegas, NV
WFO Flagstaff, AZ
WFO Phoenix, AZ
WFO Tucson, AZ

Southwest Area Red Flag Criteria

The following conditions occurring simultaneously for three or more hours across any portion of a fire weather zone:

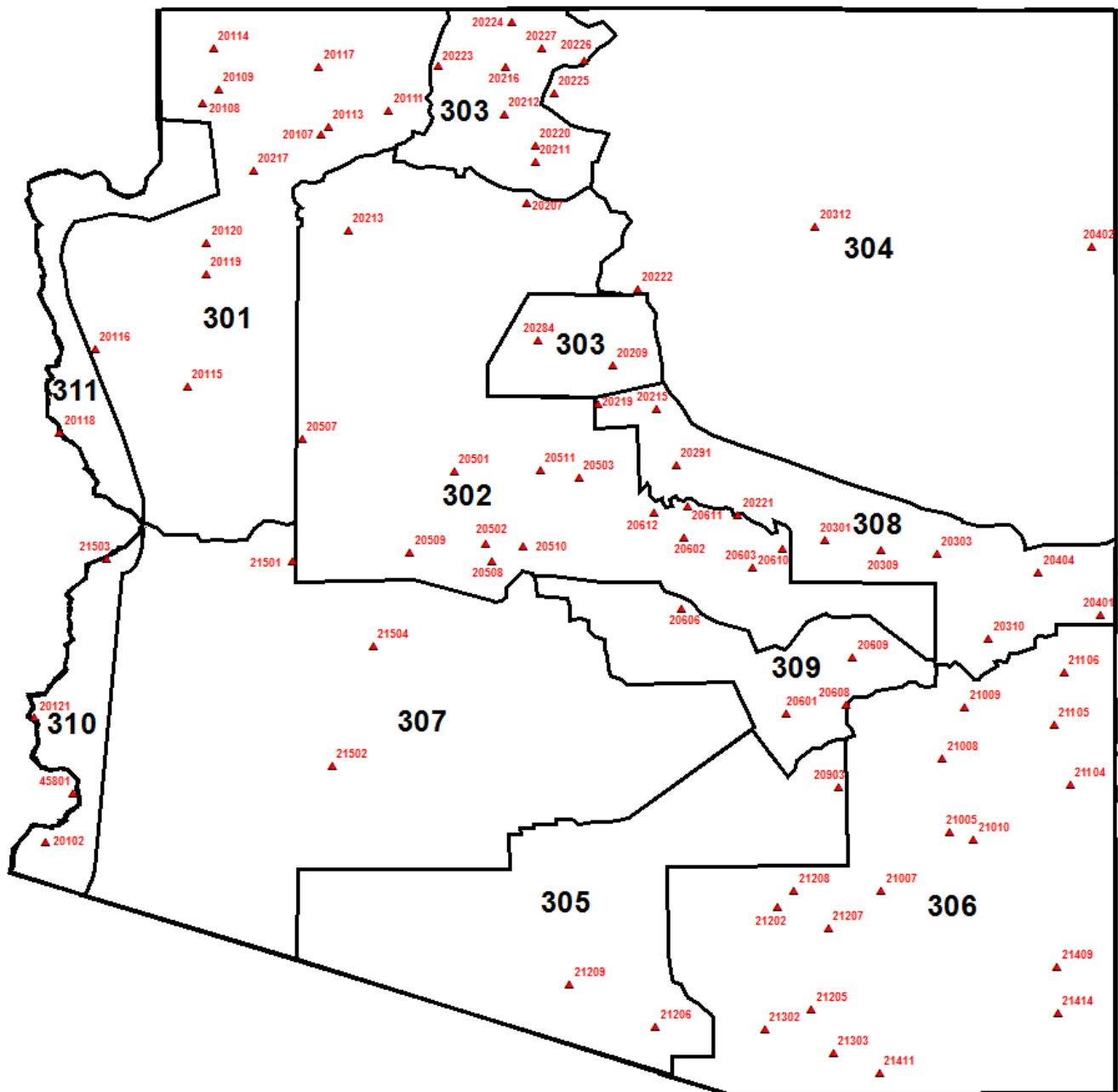
- 20 ft. winds sustained at 20 mph or greater OR gusting to 35 mph or greater
- Relative humidity 15% or lower
- NFDRS adjective fire danger rating of “High” or higher

2. New Mexico and West Texas

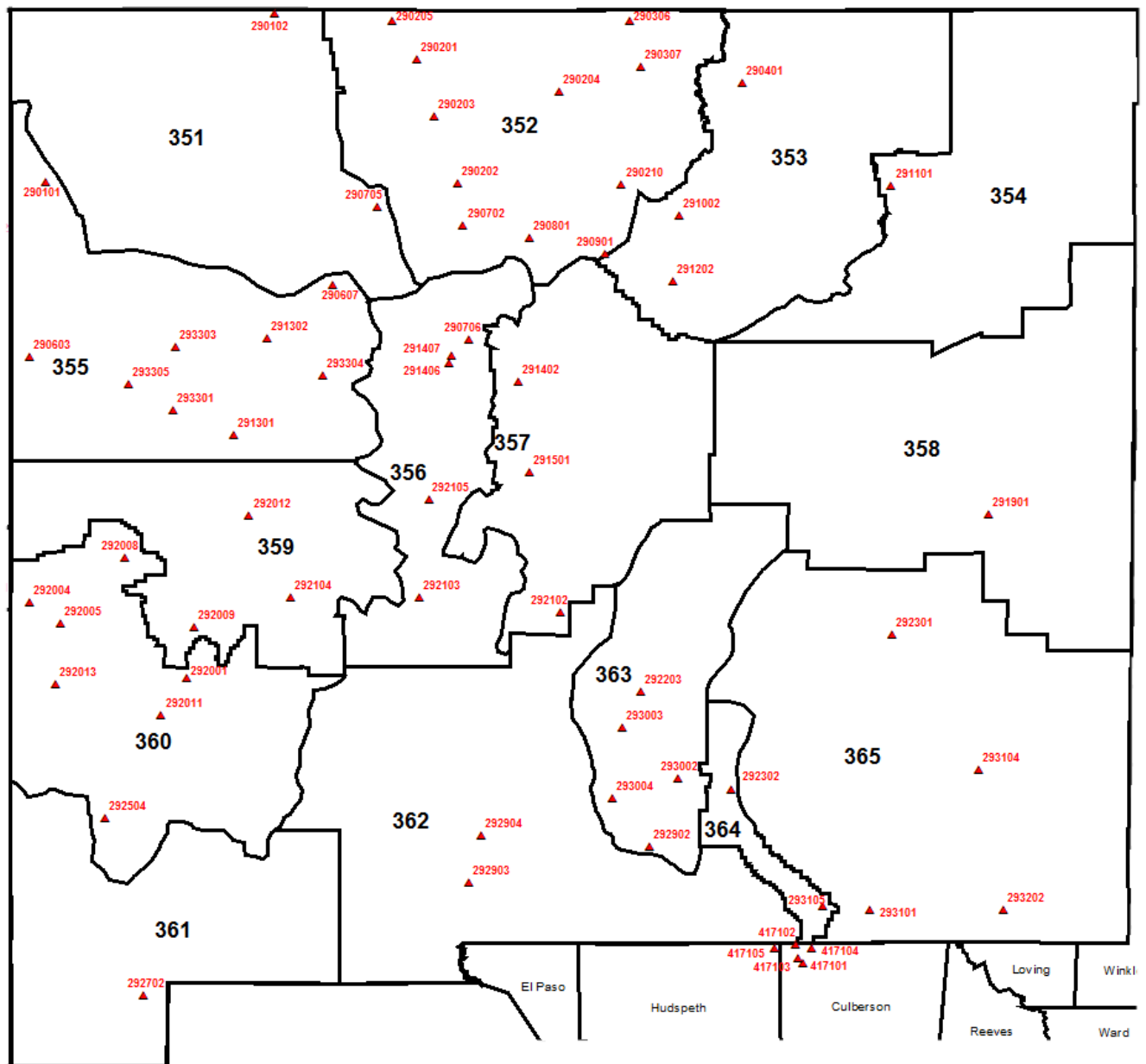


D. APPENDIX – NFDRS ZONES AND STATIONS

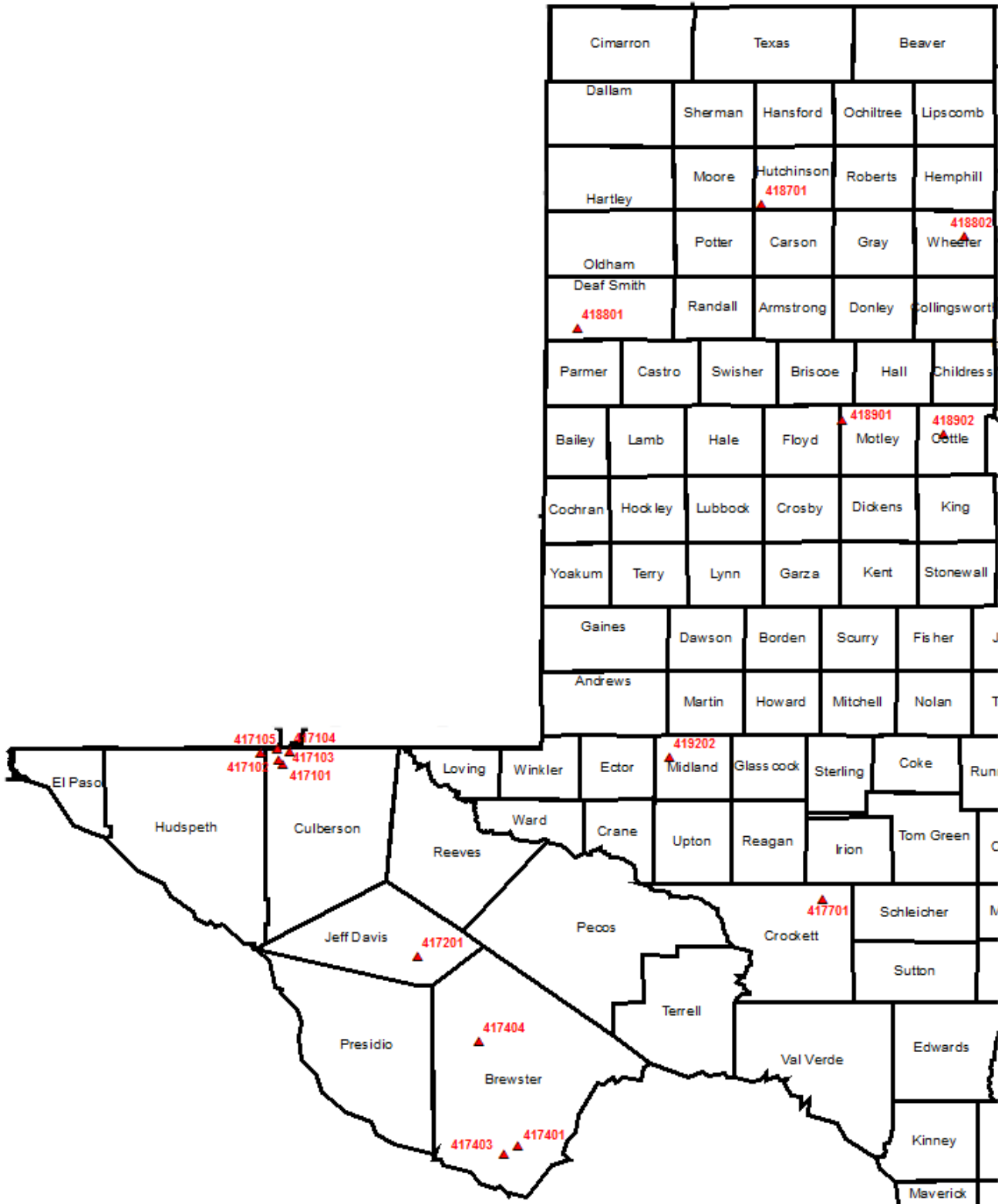
1. Arizona NFDRS Zones and Stations



2. New Mexico NFDRS Zones and Stations



3. Western Texas and Oklahoma Counties and NFDRS Stations



E. APPENDIX – NWS Digital Fire Weather Forecasts and Services

1. All NWS offices produce a digital forecast database that provides a variety of web accessible planning tools for fire weather partners. These tools can be of assistance to help determine the timing for a spot forecast request and include:
 - a) Point Forecast Matrix (PFM)
 - b) Digital Point Forecast
 - c) FARSITE
 - d) Weather Activity Planner
 - e) Hourly Weather Graphs
 - f) 48-Hour Element Meteograms
2. These tools are all available at any time via links on top of NWS office fire weather web pages. NWS offices may also produce other tools for their area of responsibility. If you have questions, ideas or need more information on digital planning tools, please contact the nearest NWS office listed in this AOP.
3. All these tools are accessible nationwide at <http://weather.gov/fire/>

F. APPENDIX – BACKUP SPOT FORECAST FORM AND INSTRUCTIONS

(click this [hyperlink](#) to access the PDF and print this form)

WS FORM D-1 (1-2005) (Supersedes Previous Editions)		SPOT REQUEST (See reverse for instructions)				U.S. Department of Commerce NOAA National Weather Service					
Please call the NWS Weather Forecast Office (WFO) when submitting a request and also after you receive a forecast to ensure request and forecast were received. Please provide feedback to WFO on forecast.											
1. Time†		2. Date		3. Name of Incident or Project			4. Requesting Agency				
5. Requesting Official			6. Phone Number			7. Fax Number		8. Contact Person			
9. Ignition/Incident Time and Date		12. Reason for Spot Request (choose one only) <input type="checkbox"/> Wildfire <input type="checkbox"/> Non-Wildfire Under the Interagency Agreement for Meteorological Services (USFS, BLM, NPS, USFWS, BIA) <input type="checkbox"/> Non-Wildfire State, tribal or local fire agency working in coordination with a federal participant in the Interagency Agreement for Meteorological Services <input type="checkbox"/> Non-Wildfire Essential to public safety, e.g. due to the proximity of population centers or critical infrastructure.					13. Latitude/Longitude:				
10. Size (Acres)							14. Elevation (ft, Mean Sea Level) Top: Bottom:				
11. Type of Incident <input type="checkbox"/> Wildfire <input type="checkbox"/> Prescribed Fire <input type="checkbox"/> Wildland Fire Use (WFO) <input type="checkbox"/> HAZMAT <input type="checkbox"/> Search And Rescue (SAR)							15. Drainage				
					16. Aspect		17. Sheltering <input type="checkbox"/> Full <input type="checkbox"/> Partial <input type="checkbox"/> Unsheltered				
18. Fuel Type: <u>Grass</u> <u>Brush</u> <u>Timber</u> <u>Slash</u> <u>Grass/Timber Understory</u> <u>Other</u> Fuel Model: 1,2,3 4,5,6,7 8,9,10 11,12,13 2,5,8											
19. Location and name of nearest weather observing station (distance & direction from project):											
20. Weather Observations from project or nearby station(s): (Winds should be in compass direction e.g. N, NW, etc.)											
Place		Elevation	†Ob Time	20 ft. Wind		Eye Level Wind.		Temp.		Moisture	Remarks (Relevant Weather, etc)
				Dir	Speed	Dir	Speed	Dry	Wet	RH DP	
21. Requested Forecast Period Date			22. Primary Forecast Elements (Check all that are needed) (for management ignited wildland fires, provide prescription parameters):					23. Remarks (other needed forecast elements, forecast needed for specific time, etc.)			
Start _____			Needed: Sky/Weather <input type="checkbox"/> Temperature <input type="checkbox"/> Humidity <input type="checkbox"/> 20 ft Wind <input type="checkbox"/> Valley <input type="checkbox"/> Ridge Top <input type="checkbox"/> Other (Specify in #23) <input type="checkbox"/>								
End _____											
Forecast needed for:											
<input type="checkbox"/> Today <input type="checkbox"/> Tonight <input type="checkbox"/> Day 2 <input type="checkbox"/> Extended											
24. Send Forecast to: ATTN:			25. Location:					26. Phone Number: Fax Number:			
27. Remarks (Special requests, incident details, Smoke Dispersion elements needed, etc.):											
EXPLANATION OF SYMBOLS: † Use 24-hour clock to indicate time. Example: 10:15 p.m. = 2215; 10:15 a.m. = 1015 Indicate local standard time or local daylight time											

WS FORM D-1
WS FORM D-1, January 2005 INSTRUCTIONS:

I. Incident Personnel:

1. Complete items 1 through 27 where applicable.
- a. Example of weather conditions on site:

13. Weather Observations from project or nearby station(s):											
Place	Elevation	↑Ob Time	20 ft. Wind		Eye Level Wind.		Temp.		Moisture		Remarks (Relevant Weather, etc.)
			Dir	Speed	Dir	Speed	Dry	Wet	RH	DP	
Unit G-50	1530'	0830	NW	6-8	NW	3-5	32		72		Observations from unit RAWS station, 50% cloud cover.

- b. If the incident (HAZMAT, SAR) involves marine, put the wave/swell height and direction in the Remarks section.
2. Transmit in numerical sequence or fax to the appropriate Weather Forecast Office. (A weather forecaster on duty will complete the special forecast as quickly as possible and transmit the forecast and outlook to you by the method requested)
3. Retain completed copy for your records.
4. **Provide feedback to NWS utilizing separate page.** Be sure to include a copy of the spot forecast with any feedback submission including forecaster's name. Feedback to NWS personnel is imperative to assist with future forecasts. **Remember, feedback on correct forecasts is equally as valuable as feedback on incorrect forecasts!** If spot forecast is significantly different than conditions on site, a second forecast may be required.

II. ALL RELAY POINTS should use this form to insure completeness of date and forecast. A supply of this form should be kept by each dispatcher and all others who may be relaying requests for forecasts or relaying completed forecasts to field units.

III. Forms are available from your local National Weather Service Weather Forecast Office. They may also be reproduced by other agencies as needed, entering the phone number and radio identification if desired.

G. APPENDIX – CATALOG OF RAWS & NFDRS OBSERVATION LOCATIONS

Permanent Stations and Locations Sorted by NFDRS Zone

BLACK ROCK	20114	BLM	36.7944	-113.7567	7080	3257E09E	EB15	VEF	AZ102	301
HURRICANE	20117	BLM	36.6992	-113.2072	5445	325883EA	EB15	VEF	AZ102	301
MOSS BASIN	20115	BLM	35.0336	-113.8925	5920	3258B670	SW02	VEF	AZ102	301
MOUNT LOGAN	20107	BLM	36.3472	-113.1989	7605	3258C0E0	EB15	VEF	AZ102	301
MUSIC MOUNTAIN	20119	BLM	35.6147	-113.7939	5420	3258E60C	SW02	VEF	AZ102	301
NIXON FLATS	20113	BLM	36.3883	-113.1581	6500	327C4220	EB15	VEF	AZ102	301
OLAF KNOLLS	20108	BLM	36.5072	-113.8161	2900	3258F57A	EB14	VEF	AZ102	301
ROBINSON TANK	20111	BLM	36.4706	-112.8414	5560	32591472	EB15	VEF	AZ102	301
TRUXTON CANYON	20120	BIA	35.7825	-113.7942	5304	327C873E	SW02	VEF	AZ102	301
TWEEDS POINT	20109	BLM	36.5819	-113.7319	5200	32595778	EB15	VEF	AZ102	301
UNION PASS	20116	BLM	35.2247	-114.3747	3520	32596200	SW02	VEF	AZ102	301
YELLOW JOHN MOUNTAIN	20217	BLM	36.1550	-113.5494	6160	325FB444	EB15	VEF	AZ102	301
CHERRY	20511	USFS	34.5964	-112.0481	5142	3233B7EA	SW02	FGZ	AZ108	302
CROWN KING	20502	USFS	34.2083	-112.3333	6000	325E30AA	SW02	FGZ	AZ108	302
FRAZIER WELLS	20213	BIA	35.8456	-113.0550	6800	5212A5E6	SW01	FGZ	AZ107	302
GOODWIN MESA	20507	BLM	34.7575	-113.2969	4200	32581688	SW02	FGZ	AZ137	302
HUMBUG CREEK	20508	BLM	34.1164	-112.3006	5250	3258736E	SW02	FGZ	AZ108	302
IRON SPRINGS	20501	USFS	34.5853	-112.5019	5385	32832340	SW02	FGZ	AZ108	302
PAYSON	20602	USFS	34.2431	-111.3028	5003	3260F7AC	SW06N	FGZ	AZ118	302
PLEASANT VALLEY	20603	USFS	34.0869	-110.9419	5179	32338270	SW06N	FGZ	AZ118	302
RED LAKE	20610	USFS	34.1814	-110.7892	6432	3331504E	SW05	FGZ	AZ118	302
SHADOW RIM	20611	USFS	34.4058	-111.2831	5620	329286DC	SW05	FGZ	AZ118	302
STANTON	20509	BLM	34.1667	-112.7333	3600	3259329E	SW02	FGZ	AZ137	302
SUNSET POINT	20510	BLM	34.1953	-112.1417	2960	3259440E	SW02	FGZ	AZ137	302
TUSAYAN	20207	USFS	35.9900	-112.1200	6570	328305AC	SW01	FGZ	AZ107	302
VERDE	20503	USFS	34.5539	-111.8492	3101	326C2058	SW06N	FGZ	AZ137	302
PINE	20612	USFS	34.3717	-111.4557	5387	325B7460	SW06N	FGZ	AZ118	302
BRIGHT ANGEL	20211	NPS	36.2047	-112.0789	8134	FA4520F4	SW01	FGZ	AZ106	303
BUCKSKIN MTN	20224	BLM	36.9306	-112.1997	6400	32590704	EB15	FGZ	AZ104	303
DRY PARK	20212	USFS	36.4500	-112.2400	8706	32390536	SW01	FGZ	AZ104	303
FLAGSTAFF	20209	USFS	35.1414	-111.6719	6903	3283D3C4	SW05	FGZ	AZ115	303
FOUR SPRINGS	20227	BLM	36.7939	-112.0422	6560	324FF0D0	EB16	FGZ	AZ104	303
GREENBASE	20284	USFS	35.2742	-112.0597	6923	323923DA	SW05	FGZ	AZ115	303
GUNSIGHT	20223	BLM	36.7044	-112.5833	5280	32582312	EB15	FGZ	AZ104	303
LINDBERGH HILL	20220	NPS	36.2856	-112.0786	8800	FA45156E	SW01	FGZ	AZ104	303
PARIA POINT	20226	BLM	36.7278	-111.8219	7235	32500158	EB16	FGZ	AZ104	303
WARM SPRINGS CANYON	20216	USFS	36.7000	-112.2300	8010	32401B62	SW01	FGZ	AZ104	303
HOPI	20312	BIA	35.8625	-110.6150	5536	327CE2D8	SW04	FGZ	AZ140	304
HOUSEROCK	20225	BLM	36.5644	-111.9781	5400	32586018	EB16	FGZ	AZ105	304

PINEY HILL	20402	BIA	35.7608	-109.1678	8110	327A01E4	SW04	FGZ	AZ111	304
WUPATKI	20222	NPS	35.5417	-111.5417	5658	FA65B478	SW05	FGZ	AZ112	304
HORSE CAMP CANYON	20903	BLM	32.9375	-110.4961	4040	32585582	SW06S	TWC	AZ151	305
SASABE	21206	FWS	31.6908	-111.4500	3250	83712434	SW06S	TWC	AZ151	305
SELLS	21209	BIA	31.9100	-111.8975	2262	327C64CC	SW03	TWC	AZ150	305
BLACK HILLS	21008	BLM	33.0867	-109.9506	3300	327D40DA	SW06S	TWC	AZ152	306
CANELO	21303	USFS	31.5497	-110.5192	4629	AAC113DC	SW06S	TWC	AZ151	306
CARR	21411	USFS	31.4450	-110.2800	5400	3238F748	SW06S	TWC	AZ151	306
COLUMBINE	21005	USFS	32.7039	-109.9139	9521	326B91E2	SW06S	TWC	AZ152	306
DRY LAKE	21009	BIA	33.3597	-109.8331	7428	5210B364	SW06S	TWC	AZ153	306
EMPIRE	21205	BLM	31.7806	-110.6347	4650	325805FE	SW06S	TWC	AZ151	306
GUTHRIE	21104	BLM	32.9500	-109.2833	6340	32583064	SW06S	TWC	AZ152	306
HEADQUARTERS	21409	NPS	32.0000	-109.3500	5400	FA61A234	SW06S	TWC	AZ152	306
HOPKINS	21302	USFS	31.6753	-110.8800	7120	327FB5AA	SW06S	TWC	AZ151	306
MULESHOE RANCH	21007	BLM	32.4000	-110.2708	4560	3258D396	SW06S	TWC	AZ151	306
NOON CREEK	21010	USFS	32.6678	-109.7881	5000	32330464	SW06S	TWC	AZ152	306
RINCON	21207	NPS	32.2056	-110.5481	8240	FA60D65E	SW06S	TWC	AZ151	306
RUCKER	21414	USFS	31.7611	-109.3486	5700	3242F3B6	SW06S	TWC	AZ152	306
SAGUARO	21202	USFS	32.3167	-110.8133	2264	3282F7D2	SW06S	TWC	AZ151	306
SCOUT CAMP	21208	USFS	32.3981	-110.7250	7600	3233A49C	SW06S	TWC	AZ151	306
STRAY HORSE	21106	USFS	33.5406	-109.3169	7935	327FF6A0	SW08	TWC	AZ153	306
TRAIL CABIN	21105	USFS	33.2667	-109.3683	6279	324747F8	SW08	TWC	AZ153	306
BELMONT	21504	BLM	33.6742	-112.9228	1855	32552074	SW03	PSR	AZ132	307
OATMAN	21502	BLM	33.0497	-113.1386	1700	328BF18E	SW03	PSR	AZ132	307
SMITH PEAK	21501	BLM	34.1158	-113.3472	2500	327D7540	SW02	PSR	AZ132	307
CASA GRANDE	20906	BLM	32.9918	-111.5326	1440	5214304A	SW06N	PSR	AZ132	307
ALPINE	20401	USFS	33.8417	-109.1222	8188	326F12CC	SW08	FGZ	AZ117	308
GREER	20404	USFS	34.0600	-109.4500	8200	326BC19E	SW08	FGZ	AZ117	308
HAPPY JACK	20291	USFS	34.6181	-111.3422	7000	326BF404	SW05	FGZ	AZ116	308
HEBER	20301	USFS	34.2317	-110.5655	6635	326F2756	SW05	FGZ	AZ116	308
LAKESIDE	20303	USFS	34.1600	-109.9800	6653	32840798	SW05	FGZ	AZ117	308
LIMESTONE CANYON	20309	BIA	34.1789	-110.2736	6900	5211D478	SW05	FGZ	AZ116	308
MORMON LAKE	20215	USFS	34.9139	-111.4428	7400	32339106	SW05	FGZ	AZ115	308
MOUNTAIN LION	20310	BIA	33.7125	-109.7097	7303	327C012A	SW08	FGZ	AZ117	308
OAK CREEK	20219	USFS	34.9417	-111.7517	4900	326326CA	SW05	FGZ	AZ138	308
PROMONTORY	20221	USFS	34.3617	-111.0200	7815	326BD2E8	SW05	FGZ	AZ118	308
GLOBE	20601	USFS	33.3269	-110.7669	4137	3283E65E	SW06N	PSR	AZ133	309
HILLTOP	20609	BIA	33.6183	-110.4200	5632	5212C000	SW06N	PSR	AZ133	309
SAN CARLOS 1	20608	BIA	33.3714	-110.4550	2755	327C34B0	SW06N	PSR	AZ133	309
TONTO BASIN	20606	USFS	33.8686	-111.3134	2414	326BA478	SW06N	PSR	AZ133	309
AHAKHAV PRESERVE	21503	BIA	34.1297	-114.3192	360	32B1803C	SW03	PSR	AZ131	310
CIBOLA	20121	FWS	33.3039	-114.6933	250	8378C19A	SW03	PSR	AZ131	310
FORT YUMA	20102	BIA	32.6536	-114.6347	185	32917156	SW03	PSR	AZ131	310
HAVASU	20118	BLM	34.7872	-114.5617	475	325846F4	SW02	VEF	AZ101	311
ALBINO CANYON	290102	BLM	36.9769	-107.6283	7160	324BF5EA	SW04	ABQ	NM101	351
CUBA	290705	BLM	35.9419	-107.0772	6172	325B84E4	SW07	ABQ	NM101	351

COYOTE	290202	USFS	36.0667	-106.6472	8651	3232D0F6	SW07	ABQ	NM102	352
DATIL	292012	USFS	34.2897	-107.7664	8300	3283F528	SW08	ABQ	NM109	352
DEADMAN PEAK	290203	USFS	36.4231	-106.7719	8263	326EB0CE	SW07	ABQ	NM102	352
DULCE #2	290205	BIA	36.9350	-107.0000	6730	52146036	SW07	ABQ	NM102	352
JARITA MESA	290204	USFS	36.5558	-106.1031	8803	32814352	SW07	ABQ	NM102	352
JEMEZ	290702	USFS	35.8411	-106.6189	8182	328390CE	SW07	ABQ	NM102	352
MAGDALENA	292104	USFS	33.8511	-107.5431	8550	32336182	SW08	ABQ	NM109	352
PELONA MOUNTAIN	292009	BLM	33.6925	-108.0631	8080	324BE69C	SW08	ABQ	NM109	352
SANTA FE WATERSHED	290901	USFS	35.6869	-105.8603	7674	324172AC	SW10	ABQ	NM102	352
STONE LAKE	290201	BIA	36.7314	-106.8647	7385	3268F30A	SW07	ABQ	NM102	352
TOWER	290801	NPS	35.7792	-106.2661	6500	FA6362DE	SW07	ABQ	NM102	352
TRUCHAS	290210	USFS	36.0589	-105.7694	8284	328383B8	SW10	ABQ	NM102	352
UTE MOUNTAIN	290306	BLM	36.9361	-105.7286	7593	3291212A	SW07	ABQ	NM102	352
WILD RIVERS	290307	BLM	36.6946	-105.6687	7530	3291212A	SW07	ABQ	NM102	352
BARTLEY	291002	USFS	35.8939	-105.4619	8339	32881572	SW10	ABQ	NM103	353
CIMARRON	290401	USFS	36.6061	-105.1203	8744	3333A53E	SW10	ABQ	NM103	353
PECOS	291202	USFS	35.5458	-105.4944	8143	3246E5FA	SW10	ABQ	NM103	353
MILLS CANYON	291101	USFS	36.0544	-104.3244	5856	328904FE	SW13	ABQ	NM104	354
BLUEWATER RIDGE	293303	USFS	35.1942	-108.1631	8289	3333B648	SW07	ABQ	NM105	355
BRUSHY MOUNTAIN	291301	BIA	34.7194	-107.8475	8300	5210D682	SW07	ABQ	NM105	355
GRANTS	291302	USFS	35.2417	-107.6700	8620	3283B622	SW07	ABQ	NM105	355
LAGUNA	293304	BIA	35.0394	-107.3731	5769	5213A71C	SW07	ABQ	NM105	355
MALPAIS LAVA FLOW	293301	BLM	34.8517	-108.1744	7514	324B837A	SW07	ABQ	NM105	355
MESA CHIVATO	290607	BLM	35.5264	-107.3211	8140	329144CC	SW07	ABQ	NM105	355
RAMAH	293305	BIA	34.9947	-108.4128	7038	5213F760	SW07	ABQ	NM105	355
WASHINGTON PASS	290101	BIA	36.0750	-108.8578	8423	3279F66E	SW04	ABQ	NM105	355
ZUNI BUTTES	290603	BIA	35.1389	-108.9411	6612	327B25F2	SW04	ABQ	NM105	355
BOSQUE	292103	FWS	33.8517	-106.8517	4455	837141D2	SW09	ABQ	NM106	356
I-40	291406	S&PF	35.1044	-106.6917	4950	AAA7F2D2	SW09	ABQ	NM106	356
MONTANO	291407	ABQ	35.1458	-106.6808	5000	333221D0	SW09	ABQ	NM106	356
SANDIA LAKES	290706	BIA	35.2300	-106.5906	4978	327AE216	SW09	ABQ	NM106	356
SEVILLETA	292105	USFWS	34.3769	-106.7978	4789	837933E4	SW09	ABQ	NM106	356
CHUPADERA	292102	BLM	33.7728	-106.0983	6520	325B376A	SW11	ABQ	NM107	357
MOUNTAINAIR	291501	USFS	34.5206	-106.2614	6488	3283A554	SW11	ABQ	NM107	357
OAK FLATS	291402	USFS	35.0042	-106.3217	7550	323372F4	SW11	ABQ	NM107	357
MELROSE RANGE	291901	DOD	34.3000	-103.8000	4350	AF100680	SW13	ABQ	NM108	358
BEAVERHEAD	292001	USFS	33.4183	-108.1000	6659	3276130E	SW08	EPZ	NM110	360
BURRO MTN	292504	USFS	32.6719	-108.5397	6965	333165D4	SW08	EPZ	NM110	360
GILA CENTER RAWS	292011	USFS	33.2233	-108.2400	5410	3232F61A	SW08	EPZ	NM110	360
LUNA	292004	USFS	33.8231	-108.9431	7046	AAC074C0	SW08	EPZ	NM110	360
MOGOLLON	292013	USFS	33.3906	-108.8067	7854	326C15C2	SW08	EPZ	NM110	360
RESERVE	292005	USFS	33.7150	-108.7772	5839	AAC0D438	SW08	EPZ	NM110	360
SLAUGHTER	292008	USFS	34.0667	-108.4333	8591	3233D20C	SW08	EPZ	NM110	360
HACHITA VALLEY	292702	BLM	31.7200	-108.3300	4291	3243D7A0	SW09	EPZ	NM111	361
DRIPPING SPRINGS	292903	BLM	32.3233	-106.5867	6172	324B900C	SW09	EPZ	NM112	362

MCGREGGOR RANGE	292902	BLM	32.5200	-105.6217	5000	326335BC	SW09	EPZ	NM112	362
SAN ANDRES	292904	FWS	32.5800	-106.5250	6138	83709540	SW09	EPZ	NM112	362
COSMIC	293004	USFS	32.7789	-105.8194	9082	326FF13E	SW12	EPZ	NM113	363
MAYHILL	293002	USFS	32.8858	-105.4683	6471	3283C0B2	SW12	EPZ	NM113	363
MESCAL	293003	BIA	33.1581	-105.7689	571	5212B690	SW12	EPZ	NM113	363
SMOKEY BEAR	292203	USFS	33.3508	-105.6667	6900	32340650	SW12	EPZ	NM113	363
DUNKEN	292302	BLM	32.8256	-105.1806	5500	325B41FA	SW12	MAF	NM114	364
QUEEN	293105	USFS	32.2036	-104.6903	5605	3287C588	SW12	MAF	NM114	364
BATDRAW	293101	NPS	32.1786	-104.4406	4425	FA623058	SW14S	MAF	NM115	365
CAPROCK	293104	BLM	32.9278	-103.8567	4210	325B241C	SW14N	MAF	NM115	365
EIGHT MILE DRAW	292301	BLM	33.6511	-104.3217	3697	327CA1D2	SW14N	MAF	NM115	365
PADUCA	293202	BLM	32.1797	-103.7217	3510	325B6716	SW14N	MAF	NM115	365
BARNHART	417701	S&PF	30.9856	-101.1578	2650	8841731C	SA09	SJT	TX076	N/A
BOOTLEG	418801	USFS	34.8286	-102.8094	4058	8841F508	SW13	AMA	TX016	N/A
CAPROCK	418901	S&PF	34.2100	-101.0300	2200	8841E67E	SA05	LUB	TX031	N/A
CEDAR	418701	NPS	35.6667	-101.5667	3060	FA62C0DC	SW13	AMA	TX008	N/A
CHISOS BASIN	417403	NPS	29.2708	-103.3014	5400	FA635744	SW14S	MAF	TX081	N/A
DOG CANYON	417102	NPS	31.9961	-104.8339	6262	326C06B4	SW12	MAF	TX258	N/A
FORT DAVIS	417201	S&PF	30.6006	-103.8867	4800	8841B602	SW14S	MAF	TX074	N/A
MATADOR	418902	S&PF	34.1175	-100.3444	1850	884252FE	SA05	LUB	TX032	N/A
MCKITTRICK	417104	NPS	31.9775	-104.7517	5004	3237015E	SW12	MAF	TX258	N/A
MIDLAND	419202	S&PF	31.9431	-102.1897	2802	8841C092	SW14N	MAF	TX062	N/A
PANTHER JUNCTION	417401	NPS	29.3275	-103.2075	3750	FA63D150	SW14S	MAF	TX081	N/A
PINERY	417101	NPS	31.8944	-104.7978	5381	FA40D7B0	SW14S	MAF	TX258	N/A
PX WELL	417105	NPS	31.9722	-104.9478	3873	3241A4C4	SW12	EPZ	TX056	N/A
SQUAW LAKE	45801	BLM	32.9083	-114.4944	300	32598110	SW03	PSR	CA231	N/A
THE BOWL	417103	NPS	31.9250	-104.8253	7725	FA61E13E	SW12	MAF	TX258	N/A
WHEELER	418802	S&PF	35.4465	-100.1983	2375	AAB68126	SW13	AMA	TX015	N/A
ELEPHANT MTN WMA	417404	S&PF	30.0305	-103.4731	4476	AAC3834A	SW14S	MAF	TX081	N/A

H. APPENDIX – VERIFICATION

1. [National Digital Forecast Database:](#)

<http://www.weather.gov/forecasts/graphical/sectors/>
2. [Rocky Mountain Center \(RMC\):](#)

http://fireweather.sc.egov.usda.gov/forecast/verif/advanced_pveri.htm
3. NFDRS: Limited monthly and annual NWS NFDRS verification is available at the following web page: <https://verification.nws.noaa.gov/content/pm/verif/fire/index.aspx>. You must establish a user account on this web page to access the statistics. Accounts may be established with assistance from your local NWS office.
4. SWCC Products: While archives are maintained of all issued products and related data, a comprehensive verification system has not been established to statistically assess Predictive Services products. Archived products and assessment of specific products on a case-by-case basis can be obtained by request to SWCC Predictive Services.

I. APPENDIX – NEW MEXICO VENTILATION REQUEST FROM 2011 (There are no changes at this time for 2014)

The New Mexico Interagency Coordinating Group (NMICG) is requesting that the National Weather Service offices that support New Mexico make certain modifications to their services to better support the federal and state fire programs in New Mexico. NMICG is tasked to facilitate the integration of interagency and intertribal planning and implementation of the National Fire Plan within the State of New Mexico. NMICG is made up of members from the US Forest Service, US Bureau of Land Management, US Fish and Wildlife Service, National Park Service, Bureau of Indian Affairs, and New Mexico State Forestry. Specifically, NMICG is requesting that the NWS offices in New Mexico provide the following services:

New Mexico Offices

1. Provide ventilation index out to 7 days. Currently Albuquerque does this using NAM 12 for the first 84 hours and then the GFS model to complete the 7 day forecast.
2. Provide a narrative ventilation trend on spot forecasts. See example below:

VENTILATION TREND... POOR/0 KNOT-FT AROUND MID-MORNING BECOMING POOR/12000 KNOT-FT BY MID-AFTERNOON.

3. Change the adjective ratings in New Mexico based on the proposed New Mexico Smoke Management Program. These changes should not be implemented until the rule becomes effective. NMICG will notify the NWS when these changes will need to take effect. The changes to the Ventilation Index are as follows:

Adjective	Ventilation Index (knot-feet)
POOR	0-19,999
MARGINAL	20,000-29,999
FAIR	30,000-39,000
GOOD	40,000+

Albuquerque NWS Office

1. Develop 1 hour interpolated ventilation index.
2. Archive select RAWS station/ventilation point text files with the 1 hour interpolated ventilation index once per day (day shift). Archiving would continue through early 2012 and then re-visited before the next AOP meeting.
3. With Predictive Services, test various alternative ventilation requirements for minimum number of hours that would eliminate those days where the maximum ventilation spikes for one hour yet remains POOR (or FAIR or MARGINAL) the rest of the day. Additional analyses could also include conducting sensitivity analysis to determine the impacts of changing the adjective rating for ventilation to require a 3 or 6 hour daily burn window above a certain threshold (e.g. 3-6 hours above 40,000 knot-ft for GOOD, 3-6 hours above 30,000 knot-ft for FAIR, & 3-6 hours above 20,000 knot-ft for MARGINAL) to assess the potential changes to the number of days per year that burning could take place under various conditions.

NMICG is grateful for the support that NWS has provided to the federal and state fire programs, and appreciates consideration of the above requests.

J. APPENDIX - HYSPLIT Trajectories with Spot Forecasts

HYSPLIT Trajectories is a model which determines trajectories for parcels at a given height above ground level. An easy method has been developed to take advantage of the base information that is already input into the spot request form to generate automated HYSPLIT Trajectory forecasts. The HYSPLIT trajectories can be used for many purposes (i.e. HAZMAT, smoke, etc.).

The HYSPLIT output represents computer model forecasts without any human interaction. They do not take into account information on burn size or fuels, thus generate trajectory forecasts for 500, 1500, and 3000 meters AGL without regarding whether fire plume height will reach that altitude.

To utilize this feature, simply add the words “**HYSPLIT to**” and your email address into the remarks section of a spot request:

Example: HYSPLIT to very.windy@web.address

Any email address works, and the results can be sent to multiple e-mail addresses using a comma separator as follows:

Example: HYSPLIT to very.windy@web.address, hot.dry@web.address

You will receive an email that consists of a table of values, a GIF HYSPLIT trajectory map, and a KMZ trajectory map for loading into Google Earth.

It is recommended that you try this procedure and get a feel for its content before using it for actual guidance on a burn or fire. For more information, please visit:

http://www.srh.noaa.gov/ridge2/fire/docs/HYSPLITone-pager_final_woSMEs.docx.

If you have any questions, please contact your local NWS Fire Weather Program Manager.

K. APPENDIX – Online Map and Map Data Access

As only a limited set of maps and data related to Fire Weather and NFDRS zones, RAWs, Predictive Services Areas, etc. can be included in this document, a series higher resolution maps and the geospatial data used to create them are available at the FTP location shown below.

ftp://ftp.nifc.gov/Predictive_Services/GACCs/SWCC/SW_AOP/

Data/files include:

- Spreadsheet of RAWs locations and attributes
- PNG and JPG maps showing zones, RAWs, etc.
- Shapefiles containing RAWs locations and attributes
- Shapefiles delineating Predictive Services Areas (PSA's)

Updated or additional data can be made available at this location by making a request to SWCC Predictive Services.